WHAT IS CLAIMED IS:

1. An electrical power distribution structure, comprising:

a pair of parallel planar conductors separated by a dielectric layer;

n discrete electrical capacitors electrically coupled between the planar conductors, wherein $n \geq 2$;

wherein the n capacitors have substantially the same capacitance C, mounted resistance R_m, mounted inductance L_m, and mounted resonant frequency $f_{m\text{-}res}$;

wherein the electrical power distribution structure has an electrical impedance Z at the resonant frequency $f_{m\text{-}res}$ of the n capacitors; and

wherein the mounted resistance R_m of each of the n capacitors is substantially equal to $(n \cdot Z)$, and wherein the mounted inductance L_m of each of the n capacitors is less than or equal to $(0.2 \cdot n \cdot \mu_0 \cdot h)$, and wherein μ_0 is the permeability of free space, and wherein h is a distance between the planar conductors.

2. The electrical power distribution structure of claim 1, wherein the mounted resistance R_m of each of the n capacitors is the sum of an equivalent series resistance (ESR) of the capacitor and the electrical resistances of all conductors coupling the capacitor between the planar conductors.

3. The electrical power distribution structure of claim 1, wherein mounted inductance L_m of each of the n capacitors is the electrical inductance resulting from the

coupling of the capacitor between the planar conductors.

4. The electrical power distribution structure of claim 1, wherein the mounted resonant frequency $f_{m\text{-}res}$ is given by:

$$f_{m-res} = \frac{1}{2\pi\sqrt{(L_m)(C)}}.$$

5. The electrical power distribution structure of claim 1, wherein the n discrete capacitors are located upon, and distributed about, a surface of at least one of the planar conductors.

6. The electrical power distribution structure of claim 1, wherein the planar conductors have corresponding outer edges, and wherein the n discrete capacitors are positioned along at least a portion of the corresponding outer edges of the planar conductors.

7. The electrical power distribution structure of claim 6, wherein adjacent capacitors are separated by substantially equal spacing distances.

8. A method for achieving a target electrical impedance Z_t in an electrical power distribution structure including a pair of parallel planar conductors separated by a dielectric layer, the method comprising:

determining a required number n of a selected type of discrete electrical capacitor dependent upon an inductance of the electrical power distribution structure L_p and a mounted inductance L_m of a representative one of the selected type of discrete electrical capacitor when electrically coupled between the planar conductors, wherein $n \geq 2$;

using the target electrical impedance Z_t to determine a required value of mounted resistance $R_{m\text{-}req}$ for the n discrete electrical capacitors;

selecting the required number n of the selected type of discrete electrical capacitor, wherein each of the n capacitors has a mounted resistance R_m substantially equal to the value of required mounted resistance $R_{m\text{-}req}$; and

electrically coupling the n discrete electrical capacitors between the planar conductors.

9. The method as recited in claim 8, wherein the mounted inductance L_m of the representative one of the selected type of discrete electrical capacitors is the electrical inductance resulting from the coupling of the capacitor between the planar conductors.

10. The method as recited in claim 8, wherein the determining of the required number n of the selected type of discrete electrical capacitor is carried out using:

$$n = \frac{L_m}{(0.2 \cdot L_p)}.$$

11. The method as recited in claim 8, wherein the determining of the required value of mounted resistance $R_{m\text{-}req}$ is carried out using:

$$R_{m-req} = n \cdot Z_t.$$

12. The method as recited in claim 8, wherein the mounted resistance R_m of each of the n capacitors is the sum of an equivalent series resistance (ESR) of the capacitor and the electrical resistances of all conductors coupling the capacitor between the planar

conductors.

13. The method as recited in claim 8, further comprising:

determining a separation distance h between the parallel planar conductors required to achieve the target electrical impedance Z_t;

selecting a thickness t for the dielectric layer such that the thickness t is less than or equal to the required separation distance h;

using thickness t to determine the inductance of the electrical power distribution structure L_p;

selecting the type of discrete electrical capacitor, wherein capacitors of the selected type have at least one substantially identical physical dimension; and

using the at least one substantially identical physical dimension to determine the mounted inductance L_m of the representative one of the selected type of discrete electrical capacitors.

14. The method as recited in claim 13, wherein the determining of the separation distance h is carried out using:

$$h = \frac{(Z_t)(\sqrt{\varepsilon_r})(d_p)}{(0.523)}$$

wherein ε_r is the relative permittivity of the dielectric layer and d_p is a distance around an outer perimeter of the electrical power distribution structure, and wherein h is in mils when the target electrical impedance Z_t is in ohms and distance d_p is in inches.

15. The method as recited in claim 13, wherein the determining of the inductance of the electrical power distribution structure L_p is carried out using:

$$L_p = (\mu_0 \cdot t)$$

wherein μ_0 is the permeability of free space.

~~16~~. A method for achieving a target electrical impedance Z_t in an electrical power distribution structure including a pair of parallel planar conductors separated by a dielectric layer, the method comprising:

determining a separation distance h between the parallel planar conductors required to achieve the target electrical impedance Z_t;

selecting a thickness t for the dielectric layer such that the thickness t is less than or equal to the required separation distance h;

using thickness t to determining an inductance of the electrical power distribution structure L_p;

selecting a type of discrete electrical capacitor, wherein capacitors of the selected type have at least one substantially identical physical dimension;

using the at least one substantially identical physical dimension to determine a mounted inductance L_m of a representative one of the selected type of

discrete electrical capacitors when electrically coupled between the planar conductors;

determining a required number n of the selected type of discrete electrical capacitor dependent upon the inductance of the electrical power distribution structure L_p and the mounted inductance L_m, wherein $n \geq 2$;

using the target electrical impedance Z_t to determine a required value of mounted resistance $R_{m\text{-}req}$ for the n discrete electrical capacitors;

selecting the required number n of the selected type of discrete electrical capacitor, wherein each of the n capacitors has a mounted resistance R_m substantially equal to the value of required mounted resistance $R_{m\text{-}req}$; and

electrically coupling the n discrete electrical capacitors between the planar conductors.

17. A method for achieving a target electrical impedance Z_t in an electrical power distribution structure including a pair of parallel planar conductors separated by a dielectric layer, the method comprising:

determining a first required number n_1 of a selected type of discrete electrical capacitor dependent upon an inductance of the electrical power distribution structure L_p and a mounted inductance L_m of a representative one of the selected type of discrete electrical capacitor when electrically coupled between the planar conductors, wherein $n_1 \geq 2$;

determining a second required number n_2 of the selected type of discrete electrical capacitor dependent upon a distance d_p around an outer perimeter of the

electrical power distribution structure and a spacing distance S between adjacent discrete electrical capacitors, wherein $n_2 \geq 2$;

performing the following if $n_2 \geq n_1$:

using the target electrical impedance Z_t to determine a required value of mounted resistance $R_{m\text{-}req}$ for n_2 of the discrete electrical capacitors;

selecting n_2 of the discrete electrical capacitors, wherein each of the n_2 capacitors has a mounted resistance R_m substantially equal to the value of required mounted resistance $R_{m\text{-}req}$; and

electrically coupling the n_2 discrete electrical capacitors between the planar conductors along an outer perimeter of the parallel planar conductors.

18. The method as recited in claim 17, further comprising:

performing the following if $n_1 > n_2$:

using the target electrical impedance Z_t to determine a required value of mounted resistance $R_{m\text{-}req}$ for n_1 of the discrete electrical capacitors;

selecting n_1 of the discrete electrical capacitors, wherein each of the n_1 capacitors has a mounted resistance R_m substantially equal to the value of required mounted resistance $R_{m\text{-}req}$; and

electrically coupling the n_1 discrete electrical capacitors between the planar conductors such that: (i) n_2 of the discrete electrical

capacitors are positioned along the outer perimeter of the planar conductors, and (ii) the remaining (n_1 - n_2) capacitors are dispersed across a surface of at least one of the planar conductors.

19. The method as recited in claim 17, further comprising:

determining a separation distance *h* between the parallel planar conductors required to achieve the target electrical impedance Z_t;

selecting a thickness *t* for the dielectric layer such that the thickness *t* is less than or equal to the required separation distance *h*;

using the thickness *t* to determining the inductance of the electrical power distribution structure L_p;

selecting the type of discrete electrical capacitor, wherein capacitors of the selected type have at least one substantially identical physical dimension; and

using the at least one substantially identical physical dimension to determine the mounted inductance L_m of the representative one of the selected type of discrete electrical capacitor.

20. The method as recited in claim 19, wherein the determining of the separation distance *h* is carried out using:

$$h = \frac{(Z_t)(\sqrt{\varepsilon_r})(d_p)}{(0.523)}$$

wherein ε_r is the relative permittivity of the dielectric layer, and wherein h is in mils when the target electrical impedance Z_t is in ohms and distance dp is in inches.

21. The method as recited in claim 19, wherein the determining of the inductance of the electrical power distribution structure L_p is carried out using:

$$L_p = (\mu_0 \cdot t)$$

wherein μ_0 is the permeability of free space.

22. The method as recited in claim 17, wherein the mounted inductance L_m of the representative one of the selected type of discrete electrical capacitors is the electrical inductance resulting from the coupling of the capacitor between the planar conductors.

23. The method as recited in claim 17, wherein the determining of the first required number n_1 of discrete electrical capacitors is carried out using:

$$n_1 = \frac{L_m}{(0.2 \cdot L_p)}.$$

24. The method as recited in claim 17, wherein the determining of the required value of mounted resistance $R_{m\text{-}req}$ for n_2 of the discrete electrical capacitors is carried out using:

$$R_{m-req} = n_2 \cdot Z_t.$$

25. The method as recited in claim 17, wherein the mounted resistance R_m of a given capacitor is the sum of an equivalent series resistance (ESR) of the capacitor and the electrical resistances of all conductors coupling the capacitor between the planar conductors.

26. The method as recited in claim 17, wherein the determining of the second required number n_2 of the discrete electrical capacitors is carried out using:

$$n_2 = \frac{d_p}{S}.$$

27. The method as recited in claim 26, wherein the electrical power distribution structure is part of an electrical interconnecting apparatus, and wherein electrical signals are conveyed within the electrical interconnecting apparatus, and wherein the electrical signals have an associated frequency range, and wherein a maximum spacing distance S_{max} between adjacent electrical capacitors is a fraction of a wavelength of a maximum frequency f_{max} of the frequency range of the electrical signals, and wherein $S \leq S_{max}$.

28. The method as recited in claim 27, wherein S_{max} is given by:

$$S_{\max} = 0.1 \cdot \frac{c}{(\sqrt{\varepsilon_r} \cdot f_{\max})}$$

wherein c is the speed of light in a vacuum, ε_r is the relative permittivity of the dielectric layer, and f_{max} is the maximum frequency of the frequency range of the electrical signals.

29. The method as recited in claim 17, wherein the electrical power distribution structure has four sides arranged as two pairs of opposite sides, and wherein the sides forming one of the pairs of opposite sides have substantially equal lengths x, and wherein the other two opposite sides have substantially equal lengths y, and wherein the distance d_p around the outer perimeter of the electrical power distribution structure is equal to $2 \cdot (x + y)$.

add B3

30. The method as recited in claim 17, wherein the determining of the required value of mounted resistance $R_{m\text{-}req}$ for n_1 of the discrete electrical capacitors is carried out using:

$$R_{m-req} = n_1 \cdot Z_t .$$